PATENT CLAIMS

We Claim:

1. A device for sampling air, the device comprising;

   an at least partially airfoil shaped frame; and

   an absorbent filter media for engaging the frame.

2. The device of Claim 1 wherein the frame includes top and bottom opposing surfaces each of the surfaces defining a leading edge and a trailing edge.
3. The device of Claim 1 further including means for propelling the frame through the air.
4. The device of Claim 1 wherein the frame is constructed of one of the following materials: carbon fiber, plastic, nylon, and a composite.
5. The device of Claim 2 wherein a part of the frame defines an interior space between the top and bottom opposing surfaces and wherein a part of the frame occupies at least a part of said interior space.
6. The device of Claim 5 wherein the absorbent filter media for fitting inside the frame is pleated.
7. The device of Claim 1 wherein the absorbent filter media is electrostatically charged.
8. The device of Claim 1 wherein the frame defines an opening adjacent its leading edge and adjacent its trailing edge.

9. The device of Claim 8 wherein the shape of the opening adjacent its leading edge is optimized such that the average velocity of the air in the opening is substantially equal to the average velocity of the free air stream when there is relative motion of the frame with respect to the air.

10. The device of Claim 1 wherein the longest dimension of the frame is between 1.0 and 12.0 inches.

11. The device of Claim 1 wherein the total weight of the frame and absorbent material is less than about 5.0 ounces.

12. The device of Claim 1 wherein the frame is formed by an injection moulding.

13. The device of Claim 2 wherein the frame is formed at least partially from one of the following materials: plastic, nylon, carbon fiber, or a composite.

14. The device of Claim 2 wherein the frame further includes at least one end plate for holding the top and bottom opposing surfaces in spaced apart relation.

15. The device of Claim 1 further including a vehicle for engaging the frame of the vehicle adapted to include a mounting plate for rotatable mounting the frame with respect to the vehicle such that the frame can be moved between a use position enclosed within a surface defining the interior of the vehicle and an exposed position for passing through the airframe.

16. The device of Claim 1 further including a vehicle to propel the frame through the air and a bracket to mount the frame to the vehicle.

17. A method for sampling air, the method comprising the steps of:

providing an airfoil shaped air sample collection device;

providing a vehicle;

attaching the air sample collection device to the vehicle; and

moving the vehicle through the air.

18. The method of claim 17 wherein the attaching step includes the step of orienting the air sample collection device with a leading edge thereof facing the direction of movement of the vehicle through the air.

19. The method of claim 17 further including following the moving step, the step of removing the air sample collection device from the vehicle and analyzing it for samples collected.

20. The method of claim 17 wherein the vehicle of the providing step is one of the following: airborne vehicle, marine vehicle or land vehicle.